

952,422.

Patented Mar. 15, 1910.

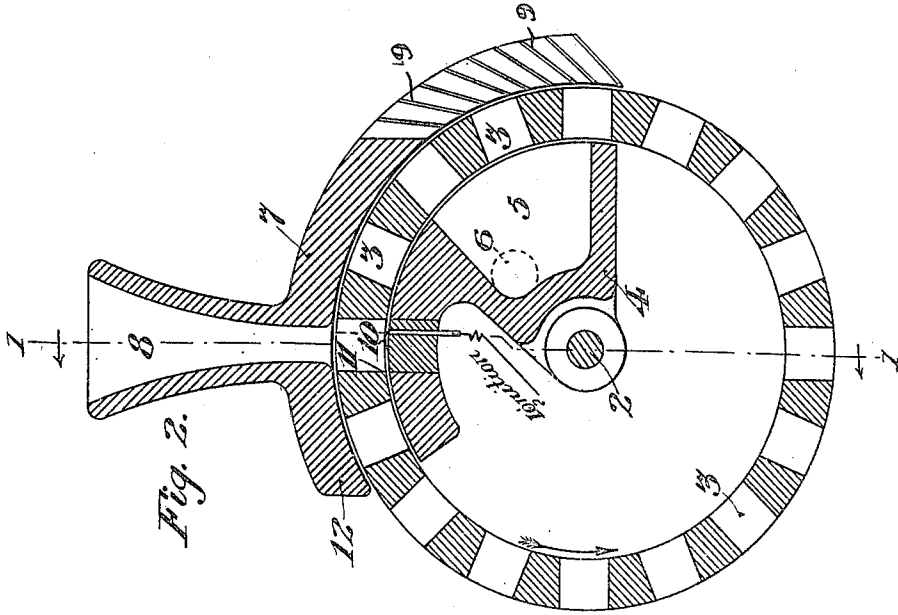


Fig. 2.

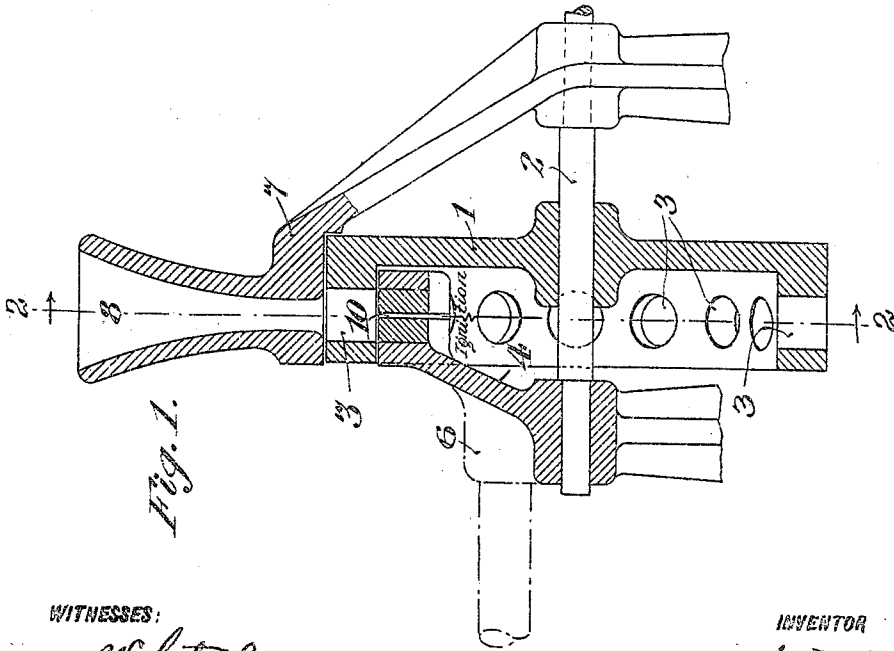


Fig. 1.

WITNESSES:

Daniel Webster, Jr.
Carrie E. Kumpfeler.

INVENTOR

Gustaf Balen
BY
Leyman Anderson
ATTORNEY.

UNITED STATES PATENT OFFICE.

GUSTAF DALÉN, OF STOCKHOLM, SWEDEN.

APPARATUS FOR PRODUCING SOUNDS.

952,422.

Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed January 4, 1910. Serial No. 536,318.

To all whom it may concern:

Be it known that I, GUSTAF DALÉN, a subject of the King of Sweden, residing in Stockholm, Sweden, have invented certain
5 new and useful Improvements in Apparatus for Producing Sounds, of which the following is a specification.

This invention refers to an apparatus for producing sounds by means of explosions of
10 a gas mixture and comprises a number of chambers arranged in an annular row carried by or formed in one with a rotary body and which chambers as the body rotates are successively filled with an explosive gas
15 mixture that is caused to explode when the chambers successively arrive at a point where the ignition of the mixture is effected. In this way as many explosions are obtained during each revolution of the body as the
20 number of chambers, and by varying such number and the velocity of rotation of the body sounds or tones with any required pitch can be produced.

The invention will now be particularly
25 described with reference to the accompanying drawings which illustrate by way of example a construction of apparatus embodying the same.

Figure 1 of such drawings shows the apparatus in central vertical longitudinal section on the line 1—1 of Fig. 2 and Fig. 2
30 is a transverse vertical section on the line 2—2 of Fig. 1.

1 indicates a wheel fixed on a rotary shaft
35 2 and formed with a number of peripherally arranged chambers 3 that open both outwardly and inwardly. In a fixed piece 4 there is formed an explosive gas mixture chamber 5 communicating with a gas mixture
40 inlet 6 and opening toward the chambers 3 so that the said chambers will be filled with the gas mixture from the chamber 5 successively as they pass said chamber during the rotation of the wheel 1. A
45 fixed piece 7 which in the construction illustrated is arranged outside the wheel 1, is provided with a megaphone 8 and if desired a number of inclined channels or buckets
50 9 are arranged nearly opposite to the chamber 5. Opposite the megaphone 8 an electricity contact spring 10 is arranged to slide on the piece 4 against the inner surface of the wheel 1.

The apparatus works in the following
55 manner. When a chamber 3, during the rotation of the wheel 1 in the direction indicated by the arrow travels opposite to the chamber 5 it is gradually filled with explosive mixture. When it arrives opposite the
60 mouth of the megaphone 8 the gas mixture contained in the chamber is ignited by a spark generated when the contact spring 10 leaves the forward edge 11 of the said chamber 3, the wheel 1 and the spring 10 being
65 connected with a pole of a source of electricity. A similar operation takes place when the next chamber 3 arrives opposite the megaphone 8 and the result will thus be a number of explosions during each revolution of the wheel 1 corresponding to the
70 number of chambers 3 of the wheel, said explosions being thrown out through the megaphone 8. Thus by varying the number of chambers 3 and their velocity of rotation any desired number of explosions can be obtained per unit of time and thereby a tone
75 of any desired pitch can be generated. When the chambers 3 leave the edge 12 of the fixed piece 7 they enter into communication with the atmosphere whereby the combustion
80 gases contained in them are thrown out by the action of centrifugal force and pure air enters through the inner side of the wheel. The chambers 3 will thus be cleaned
85 by air and simultaneously cooled so that pure air is contained in them when they again reach the chamber 5.

The arrangement of the channels or buckets 9 is intended to generate a slight suction in the chambers 3 during their passage past them, whereby the gas or the gas mixture need not be introduced with pressure but on the contrary can if desired be subjected to a slight vacuum. The air between the wheel 1 and the channels or
90 buckets 9 tends to flow out through the channels or buckets whereby a suction is generated which facilitates the tendency of the centrifugal force to throw the gas mixture outwardly into the chambers 3.
100

It will be understood that within the scope of my invention I may vary the number and relative arrangement of the various elements thereof and that I am not limited to the construction shown which is but one
105 embodiment of my invention. The contact 10 need not necessarily slide against the wheel 1, since it is obvious that some other form of ignition device may be used.

Having now particularly described and
110

ascertained the nature of the said invention and in what manner the same is to be performed I declare that what I claim is:—

1. An apparatus for producing sounds by means of explosions of gas or a gaseous mixture, comprising a rotary member having a number of chambers carried thereby, means for charging the said chambers with an explosive gas or gaseous mixture at substantially atmospheric pressure, a sound increasing device located adjacent the path of said chambers, and means for successively igniting said uncompressed charges when the chambers containing them are in communication with the said sound increasing device.

2. In an apparatus for producing sounds by means of explosions of a gas or gaseous mixture, the combination of a rotary member having chambers formed in the peripheral portion thereof, a gas inlet chamber from which the said chambers are adapted to be charged with an explosive gas or gaseous mixture, an ignition device beyond said inlet chamber for successively igniting said charges and a sound increasing device opposite the ignition device to receive the charges successively as they explode.

3. In an apparatus for producing sounds by means of explosions of a gas or gaseous mixture, the combination of a gas inlet chamber with a rotary member, the said rotary member having a rim-like portion in which is formed a series of chambers open at both ends, the said chambers being adapted to receive charges of a gas or gaseous mixture from the said gas inlet chamber and the said series of chambers being adapted to be cleaned and cooled by the atmosphere passing therethrough.

4. In an apparatus for producing sounds by means of explosions of a gas or gaseous mixture, the combination of a rotary wheel the rim of which is formed with gas chambers that extend completely therethrough, a fixed gas inlet chamber in the path of one of the ends of some of the said gas chambers, a megaphone arranged in the path of the opposite ends of some of the gas chambers,

and an ignition device associated with the said megaphone.

5. In an apparatus for producing sounds by means of explosions of gas or a gaseous mixture, the combination of a rotary member carrying gas chambers, means for supplying gas to said chambers, and a device near said means and adjacent said rotary member and having channels or buckets inclined outward and in the direction of rotation, individual gas chambers during charging being in simultaneous communication with both said channels or buckets and said gas supplying means.

6. In an apparatus for producing sounds by means of explosions of a gas, the combination of a stationary supply chamber having an opening therein, a rotary member having chambers formed therein open at both ends, the said chambers being carried past the opening in the said stationary chamber where- by gas is delivered from the said stationary chamber to the said chambers in the rotary member, a sound increasing device which is adapted to have communication successively with the said chambers, and means for successively igniting gas in the said chambers while they are respectively in communication with the said sound increasing device.

7. In an apparatus for producing sounds by means of explosions of gas or a gaseous mixture, the combination of a rotary member carrying gas chambers open at both ends, a stationary gas inlet chamber in the path of one end of said gas chambers, stationary channels or buckets inclined outward and in the direction of rotation open at both ends and having one end in the path of the other end of said gas chambers and opposite said gas inlet chamber so as to induce the flow of gas into the said chamber.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GUSTAF DALÉN.

Witnesses:

WALDEMAR BOMAN,
A. SÖDERSTRÖM.